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This table exhibits a considerable number of gaps, which the progress of science will not be long in filling up. Even now we have established by experiment that bromide of amylene suffers many changes, which are perfectly analogous to those which we have witnessed in the acryl series, and even the derivatives of olefiant gas appear to exhibit in many respects an analogous deportment.

*February 14, 1856.*

Dr. W. A. MILLER, V.P., in the Chair.

The following communication was read :—

“On Periodical Laws discoverable in the Mean Effects of the larger Magnetic Disturbances.”—No. III. By Colonel EDWARD SABINE, R.A., D.C.L., Treas. and V.P.R.S.

(Abstract.)

In two previous papers bearing the same title as the present (Phil. Trans. 1851, Art. V., and 1852, Art. VIII.), the author showed, from the hourly observations of the magnetic Declination at Toronto and Hobarton, that the magnetic disturbances of large amount, and apparently irregular occurrence, commonly called *magnetic storms*, are found, when studied in their *mean* effects, to be governed by periodical laws of systematic order and regularity, and to exhibit periods whose duration is, respectively, 1, a solar day; 2, a solar year; and 3, a period of about ten of our solar years, corresponding both in duration and in the epochs of maximum and minimum variation, to the approximately decennial period discovered by Schwabe in the phenomena of the solar spots. In the present paper the author communicates the results of a similar investigation into the laws of the disturbances of the two other magnetic elements at Toronto, namely, the Inclination and the Total Force, derived from the hourly observations of the horizontal and vertical Forces during the five years from July 1843 to June 1848; affording, as he states, a full confirmation of the existence of periodical laws regulating the disturbances of the Inclination and Total Force corresponding to those which he had previously deduced from the disturbances of the other magnetic Element, viz. the Declination.